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Infinite dimensional Teichmüller spaces and moduli spaces

edited by Ege Fujikawa

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Research Institute for Mathematical Sciences
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Preface

This volume in the Kôkyûroku Bessatsu Series is the proceedings of the workshop "Infinite dimensional Teichmüller spaces and moduli spaces", which was held at Research Institute for Mathematical Sciences, Kyoto University, from November 19 to 22 in 2007. There were 18 lectures presented in this workshop. I would like to thank all the speakers. Especially, I want to convey my greatest gratitude to Professor Frederick Gardiner, who gave us 5 lectures concerning recent topics in this field.

Theories of Teichmüller spaces are studied in various fields of mathematics. However, for analytically infinite Riemann surfaces, the Teichmüller spaces become infinite dimensional and they have several aspects and phenomena different from the finite dimensional case; some results involve much more difficult and complicated arguments. The purpose of this workshop was to learn recent researches on infinite dimensional Teichmüller spaces and to exchange new ideas from a complex analytic viewpoint. It was my pleasure to have such an opportunity of studying the developments of these theories.

This volume collects 10 contributions by the speakers. I hope we should have a benefit from these papers based on the lectures in the workshop, and consequently, the infinite dimensional Teichmüller theory will be developed further.

March 2010

Ege Fujikawa

Workshop speakers with titles

Ege Fujikawa (Chiba University)
- · Intermediate Teichmüller space and complex analytic structure of moduli space

Frederick Gardiner (City University of New York)
- · Teichmüller theory and the associahedron
- · Circle expanding maps
- · Rohlin's formula for UAA mappings
- · Thompson's group in Teichmüller theory
- · Infinite dimensional hyperelliptic Riemann surfaces generated by horseshoe maps

Yoichi Imayoshi (Osaka City University)
- · On the holomorphic sections of a holomorphic family of Riemann surfaces induced by a Kodaira surface

Kentaro Ito (Nagoya University)
- · Topology of quasifuchsian space of once-punctured torus

Katsuhiko Matsuzaki (Okayama University)
- · Symmetric structures on a Riemann surface
- · Quasiconformal mapping class groups having common fixed points on the asymptotic Teichmüller spaces

Hideki Miyachi (Osaka University)
- · On the Gardiner-Masur boundary of Teichmüller space
- · On the image of asymptotic Bers map

Toshihiro Nakanishi (Shimane University)
- · Trace identites and the mapping class group acting on $SL(2,\mathbb{C})$-representation spaces of punctured surface groups

Kunio Obitsu (Kagoshima University)
- · Asymptotics of the Weil-Petersson metric and the Takhtajan-Zograf metric

Hiroshige Shiga (Tokyo Institute of Technology)
- · On conformal mappings and Kleinian groups

Mitsuhiro Shishikura (Kyoto University)

· Renormalization in Complex Dynamics and Teichmüller space

Zongliang Sun (Zhongshan University, Tokyo Institute of Technology)

· On metrics in Teichmüller space and a description of thick parts of Teichmüller space

Masahiko Taniguchi (Nara Women's University)

· Structure theorem for non-injective self-covers and some applications

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